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Perceived Academic Stress and Social Support among University Undergraduate Students During COVID–19 Pandemic

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Abstract

University students have been affected by coronavirus outbreak and by the changing study conditions due to the multiple quarantine periods. This paper aimed at investigating the differences of perceived academic stress and perceived and received social support in university undergraduate students during the two waves of the COVID-19 pandemic. The current study utilized the quantitative longitudinal approach with the sample of 188 undergraduates whose participated on both stages of investigation (during the first wave and the second wave of the COVID-19 pandemic). The data of Perceptions of Academic Stress Scale, Multidimensional Scale of Perceived Social Support, and modified version of Received Support Questionnaire have been used for the analysis. The findings indicated that the level of social support among university undergraduates improved significantly during the second wave of COVID-19 pandemic compared to the level during the first wave. It was found that all perceived social support indicators levels were higher during the second wave of pandemic than during the first wave. The study results also revealed significant differences between key received social support indicators among university undergraduates during the first and second wave of the pandemic. Specifically, university undergraduates reported greater informational support, tangible support, and received social support–total during the second wave of the pandemic than during the first wave.

Keywords: perceived academic stress, perceived social support, received social support, Covid-19 pandemic, university undergraduate students.

1. Introduction

The COVID-19 pandemic has directly or indirectly affected almost every person either through the infection coronavirus or through the wide-ranging measures and their economic and

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social impact. Therefore, the impact of the pandemic on mental health outcomes has been frequently studied in the general population. Critical review by Manchia et al. (Manchia et al., 2021) highlighted that "the pandemic and the accompanying measures have led to changes in people's daily routines, limited social interactions, as well as formed tensions among families in lockdown together, and fear of getting ill and/or spreading the virus" (Manchia et al., 2021: 2). Meta-analyses revealed that lockdowns are mentally challenging periods for university undergraduates since stress levels are significantly increased and can reach clinical levels in this population (Damiano et al., 2021; Fischer et al., 2020).

"Stress can be defined as an experience when people perceive situational demands to exceed their coping resources" (Malinauskas, 2010: 747). Perceived academic stress among university students can be defined like stress, which „emerges out from experiencing stress due to factors such as scholarship requirements, family-related pressures, competition in the class and course-related stress and financial burdens" (Misra, Castillo, 2004: 133). Web-based learning, limited social interactions, and lockdown have changed lifestyle and learning habits, and have had an impact on students' academic stress levels and psychological well-being (Vulić-Prtorić et al., 2020). Coronavirus outbreak brought many additional sources of stress: „concerns about one's own health risks and those of loved ones, abnormally reduced social contacts with others, separation from friends and family, loss of freedom, closure of universities, online education" (Vulić-Prtorić et al., 2020: 1). Students were forced to stay away from the usual places for them (for instance, colleges, universities). Students especially missed their friends, colleges, universities, campuses, libraries, laboratories, face-to-face group assignments projects. Due to the increased stress among university students, educators have also had more challenges because they needed to move from the role of educator to the role of intellectual mentor. Psychological consequences of lockdowns during coronavirus outbreak had negative impact on mental health among university students and this influence can last for months (Brooks et al., 2020).

The present study explored three constructs (perceived academic stress, perceived social support and received social support) in the context of two different periods Covid-19 pandemic and strives to reveal how the undergraduates' perceived academic stress and social support (perceived and received) has been changed. Perceived social support is defined as the "social resources that persons perceive to be available or that are actually provided to them by non-professionals in the context of both formal support groups and informal helping relationships" (Cohen et al., 2000: 4). Received support typically could be interpreted like „the frequency with which an individual has received supportive resources during a specific time frame and is usually assessed with retrospective self-reports" (Gottlieb, Bergen, 2010: 512). We need to analyse both types of social support because perceived and received support generally differed in 12 % of the total variance (Haber et al., 2007).

The present study is based on the Theory of Stress-Buffering Role of Social Support (Cassel, 1976) in the context of the COVID-19 pandemic. The Theory of Stress-Buffering Role of Social Support highlights that social support plays a protective role against the negative effects of stress from negative life events on mental and physical health (Szkody et al, 2021). Social support or resources that a person has, or thinks they (resources) have available, can help the person feel more in control of a stressful situation or can lead to skilful processing of a negative event (for example during coronavirus outbreak) (Szkody et al, 2021). To sum up, perceived social support can help the person reappraise stressful events (Cohen et al., 2000), whereas received support can intervene in the effects of stress to help with coping (Lakey, Cohen, 2000). Researchers (Nelson et al., 2020) have found that higher levels of support are protective against social distancing, self-isolation and stress during the coronavirus outbreak among not only university students but also among adults age 20 and older.

According to Rogowska et al. (Rogowska et al., 2021a: 3) "changes occurred between the first and second waves of the COVID-19 pandemic in perceived stress, and coping styles, as a consequence of stressful person–environment transactional process". During the first wave of the pandemic, there was a lot of stress on the public, but when the lockdown was cancelled, people live with the hope that the pandemic would end. During the second wave, although the quarantine was cancelled, but "there was a lot of information about new strains of coronavirus, and predictions about the end of the pandemic were not clear" (Dumciene, Pozeriene, 6). Therefore, it was important to reveal how the undergraduates' perceived academic stress and social support has

been changed. Many investigations in this research field are based on cross-sectional study designs and they cannot identify the psychological impact during the different time points of the COVID-19 pandemic (for instance, during the first and second waves of pandemic). This means that longitudinal study design with investigation on the same participants at different waves of the COVID-19 pandemic are required. Consequently, we designed a longitudinal cohort study with the two waves of peak phases of the quarantine periods. Accordingly, the following research questions guided this study, which is based on the complex analysis of perceived academic stress and perceived and received social support in the context of two waves of the COVID-19 pandemic: 1) Does perceived academic stress differ in university undergraduate students during the first and second waves of the COVID-19 pandemic? 2) Do perceived and received social support differ in university undergraduate students during the first and second waves of the COVID-19 pandemic?

Study hypotheses – we hypothesize that (1) perceived academic stress levels among university undergraduates after the second wave of COVID-19 would be significantly lower than after the first wave and (2) social support levels after the second wave of COVID-19 would be significantly higher than after the first wave. Our hypotheses are based on university students' longitudinal studies (Amendola et al., 2021; Li et al., 2020), which indicated a decrease in stress symptoms with time, and increase in social support.

The aim of the study was to determine perceived academic stress and perceived and received social support in university undergraduate students during the two waves of the COVID-19 pandemic. In our opinion, it is very important to analyse these phenomena in the context of the COVID-19 pandemic because it can broaden our understanding where social support may decrease or increase, and how university teachers and significant others can help undergraduates during the coronavirus outbreak.

2. Methods

Sample and Procedure. A cohort study was conducted during the first (First Wave) and second (Second Wave) waves of the COVID-19 pandemic. We have chosen the random serial sampling method for this study. Two universities were selected using simple random sampling as they were similar according to the comparability of university size and their quality of undergraduate students. The selection of six academic student's groups from each one was conducted by a randomization software. The sample size recruited for the study from all 12 selected groups undergraduates from the two universities. E–mails with the invitation to participate in the investigation for all undergraduates were sent, and students participated voluntary on-line. In the on-line applied questionnaire undergraduates were also asked to provide demographics including age, gender, academic year, academic group code, and university affiliation.

The sample consisted of 196 undergraduates (102 females and 94 males) during the first wave of COVID-19 and of 188 undergraduates from the same chosen academic groups (99 females and 89 males) during the second wave of pandemic. The sample of 188 undergraduates whose participated on both stages of investigation and whose mean age at the start of the study was 20.65 years (SD = 1.41) has been used for analysis.

The first wave of coronavirus disease (lockdown) in Lithuania was from 16 March 2020 to 17 June 2020. The second wave (lockdown) was from 7 November 2020 to 30 June 2021. The first survey was conducted from 1 June 2020 until 20 June 2020. The second survey was administrated from 1 June 2021 to 30 June 2021.

The study was approved by the Committee for Social Sciences Research Ethics of Lithuanian Sport University. The research was conducted in accordance with ethical guidelines and the legal code of the country in which the study was conducted. The study used the three following instruments listed below.

Instruments. Perceptions of Academic Stress Scale (PAS) (Bedewy, Gabriel, 2015) is an 18-item, five-point Likert-type scale to measure perceived academic stress and its sources in students. This scale was standardized on students pursuing undergraduation and postgraduation. The responses ranged from (1 – "strongly disagree" to 5 – "strongly agree") measuring four dimensions with internal consistency. Four dimensions (components) are as follows: pressures to perform (0.6), perceptions of workload and examinations (0.6), self-perceptions (0.5) and time restrains/constraints (0.6). Pressures to perform "refers to the excessive stresses from the competitive peer pressures, parents' expectations, and teachers' critical comments on students'

performance" (Bedewy, Gabriel, 2015: 5). Second dimension "refers to stresses relating excessive workload, lengthy assignments, and worried about failing examinations (Bedewy, Gabriel, 2015: 5). Third component "refers to academic self-confidence and confidence for success as a student, in future career and confidence in making the right academic decisions (Bedewy, Gabriel, 2015: 5). Time restrains "refers to stresses as a result of limited time allocated to classes, inability to finish homework, the difficulty to catch up if behind, and the limited time to wind up or relax (Bedewy, Gabriel, 2015: 5). It has been also calculated total indicator of perceived academic stress (Total perceived academic stress). The internal consistency of whole scale was .72 for the present sample.

Individual perceptions of social support among university undergraduates were assessed using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). "The MSPSS has been shown to be psychometrically sound, with good reliability, factor validity and adequate construct validity" (Zimet et al., 1988: 33). The MSPSS consists of 12 items describing three different sub-scales: Family Support (4 items), Friend Support (4), and Significant Other Support (4). Respondents used a 7-point Likert-type scale (very strongly disagree to very strongly agree) with each item. Cronbach's alphas ranged from .91, .87, and .85, for the subscales of perceived support from family, friends and significant other respectively (Zimet et al., 1988). "The reliability of the total scale was .88, and these values indicate good internal consistency for the scale as a whole and for the three subscales" (Zimet et al., 1988: 36). The Lithuanian version of the MSPSS reported an internal consistency value of .61 for whole scale (Malinauskas, 2010). It has been also calculated total indicator of perceived social support (Perceived support–Total) by summing and averaging items in the present study. The coefficient alpha for whole scale was .71 for the present sample.

The Athletes Received Support Questionnaire (ARSQ; Freeman et al., 2014) was modified for students and used to measure received social support among university undergraduates. "The participants were asked to rate on a 5-point Likert (0 – none, 1 – once or twice, 2 – three or four times, 3 – five or six times, and 4 – more than seven times) using 22 items" (Freeman et al., 2014: 194). For each item, the participants rated the frequency of support they received respectively from teachers/lecturers and friends/classmates over the previous week. This instrument measures four dimensions of received social support among university undergraduates: emotional support (5 items: e.g., "cheer you up"), esteem support (5 items: e.g., "reinforce the positives"), informational support (6 items: e.g., "give you advice about what to do"), and tangible support (6 items: e.g., "help with time planning"). It has been also calculated total indicator of received social support (Received support–Total). Previous research "indicated acceptable level of internal consistency of the ARSQ (alpha =.89–.94)" (Katagami, Tsuchiya, 2017: 74). The reliability and validity of the modified version of ARSQ for students was confirmed in a pilot study for the present investigation. The modified version of ARSQ for students shows acceptable level of internal consistency (Cronbach's alpha coefficients ranged from .76 to .88) for the present study.

Statistical Analysis. Research data were statistically processed using SPSS 26.0 (Statistical Package for Social Sciences). Descriptive statistics, namely means, standard deviations, were calculated. Skewness (the symmetry of a distribution) and kurtosis (the homogeneity of a distribution) coefficients were calculated for the verification of the assumption of data normality because Student's *t*-test requires normally distributed data. Skewness and kurtosis coefficients were between +1 and -1. "When skewness and kurtosis coefficients are in the range from 2 to −2, the distribution of all variables does not significantly differ from the normal distribution and Student's *t*-test can be used for comparisons between means" (Dumciene, Pozeriene, p. 6). We calculated the reliability of each dimension given by the index of Cronbach's alpha internal consistence. Data analysis used the Student's *t*-test for paired samples, comparing means between the first and second surveys (during first and second waves). Effect sizes were expressed as Cohen's *d*. Cohen's *d* effect sizes are generally defined as small (*d* = .2), medium (*d* = .5), and large (*d* = .8). Statistical significance was set at $p < .05$ for all tests.

3. Results

The results obtained from the survey using the Perceptions of Academic Stress Scale are summarised in Table 1.

Table 1. The statistical indicators of perceived academic stress among university undergraduates during the first and second waves of the COVID-19 pandemic

Components	First Wave		Second Wave		*t*-test score	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Pressures to perform	3.52	0.558	3.34	0.490	3.63	0.000	0.34
Perceptions of workload	3.83	0.416	3.70	0.363	3.35	0.001	0.33
Academic self-perceptions	3.62	0.374	3.54	0.294	2.27	0.024	0.24
Time restraints	3.61	0.394	3.50	0.578	2.24	0.026	0.22
Total perceived academic stress	3.66	0.307	3.52	0.276	4.87	0.000	0.49

Notes: M – mean; SD – standard deviation; Cohen's d – effect size

Using the Student's *t*–test for paired samples, we found that with respect to all components of perceived academic stress university undergraduates during the first and second waves of the COVID-19 pandemic differed statistically significantly. As illustrated in Table 1, during the second wave of pandemic undergraduates indicated lower perceived academic stress than during the first wave of pandemic and reported lower scores of pressures to perform (t (187) = 3.63; p = 0.000), perceptions of workload (t (187) = 3.35; p = 0.001), academic self-perceptions (t (187) = 2.27; p = 0.024), time restraints (t (187) = 2.24; p = 0.026), total perceived academic stress (t (187) = 4.87; p = 0.000). Thus, all scores of components of perceived academic stress were rated higher during the first wave of pandemic than during the second wave.

The results of the paired samples *t*-tests also were used to reveal the differences between perceived social support among university undergraduates during the first and second wave of the pandemic. These results are presented in Table 2.

Table 2. The statistical indicators of perceived social support among university undergraduates during the first and second waves of the COVID-19 pandemic

Components of perceived support	First Wave		Second Wave		*t*-test score	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Family support	4.28	0.594	4.43	0.600	-2.52	0.013	0.25
Friends support	4.48	0.705	4.65	0.563	-2.64	0.009	0.27

Significant other support	4.36	0.613	4.50	0.579	-2.21	0.028	0.23
Perceived support–total	4.43	0.396	4.53	0.376	-2.41	0.017	0.26

Notes: M – mean; SD – standard deviation; Cohen's d – effect size

It was found that university undergraduate students' perceived social support indicators levels were higher during the second wave of pandemic than during the first wave. Statistical analyses revealed that university undergraduates reported greater scores of family support (t (187) = -2.52; p = 0.013), friends support (t (187) = -2.64; p = 0.009), significant other support t (187) = -2.21; p = 0.028), perceived support–total t (187) = -2.41; p = 0.017). These data reveal that the restrictions imposed during the second wave of COVID-19 pandemic, the decline in social contacts, isolation (quarantine), and changes in study conditions were possibly counterbalanced by perceived better social support.

The overall received social support among university undergraduates during the second wave of the COVID-19 pandemic was statistically significantly (p < 0.05) better than during the first wave in three from five indicators (Table 3).

Table 3. The statistical indicators of received social support among university undergraduates during the first and second waves of the COVID-19 pandemic

Components of received support	First Wave		Second Wave		*t*-test score	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Emotional support	2.55	0.469	2.57	0.383	-0.49	0.625	0.05
Esteem support	2.22	0.463	2.25	0.438	-0.63	0.527	0.07
Informational support	2.54	0.498	2.63	0.424	-1.99	0.048	0.19
Tangible support	2.38	0.428	2.46	0.364	-1.98	0.049	0.20
Received support–total	2.42	0.223	2.48	0.210	-2.47	0.014	0.28

Notes: M – mean; SD – standard deviation; Cohen's d – effect size.

There were the significant differences between received social support among university undergraduates during the first and second wave of the pandemic. University undergraduates reported greater informational support (t (187) = -1.99; p = 0.048), tangible support (t (187) = -1.98; p = 0.049), and received support–total (t (187) = -2.47; p = 0.014), during the second wave of the pandemic than during the first wave. Meanwhile, the paired samples *t*-test showed that there no significant differences between received social support among university undergraduates during the first and second wave of the pandemic in terms of emotional support (t (187) = -0.49; p = 0.625), and esteem support (t (187) = -0.63; p = 0.527). The results of this research reveal that

probably due to better received social support during the second wave of COVID-19 pandemic perceived academic stress levels were lower.

4. Discussion

This study aimed to analyze perceived academic stress and perceived and received social support in university undergraduate students during the two waves of the COVID-19 pandemic. We used the Student's *t*-test for paired samples, comparing means scores between the first and second surveys to reveal the differences between stress and social support indicators among university undergraduates during the first and second wave of the pandemic. We observed that all components of perceived academic stress changed and perceived academic stress levels after the second wave of COVID-19 were significantly lower than after the first wave. Our first hypothesis, that perceived academic stress levels among university undergraduates after the second wave of COVID-19 would be significantly lower than after the first wave, was confirmed.

The present study has revealed that university undergraduate students' total perceived academic stress levels were higher after the first wave than those of after the second wave of COVID-19 (effect size was week, Cohen's *d* = 0.49), what is in agreement with the data found by Rogowska et al. (2021b), where the differences between waves in perceived stress "were significant, with moderate effect size, $\chi^2(2)$ = 152.69, $p < 0.001$, Cramer's V = 0.28)" (Rogowska et al., 2021b, p. 6) or with the data found by Panteli et al. (2021), where effect size was small (Cohen's *d* = 0.37). The present research data may be explained by the data of meta-analysis (Malinauskas, Malinauskiene, 2022), which emphasises that during the beginning of COVID-19 pandemic, undergraduates' perceived stress have only increased. "Students experiencing worsened depressive symptoms, diminished sleep quality, increased anxiety, social disconnectedness, an absence of peer support, loneliness, gloom, and outrage" (Malinauskas, Malinauskiene, 2022: 2). During the second wave the dynamic of the spread of the coronavirus and level of restrictions, duration of quarantine, as well as resilience and adjustment has changed the situation and perceived stress levels decreased.

Our results coincide with other studies on the university students stress, for instance, by Rogowska et al. (2021b), which indicate that there are significant differences in stress across three waves of the COVID-19 pandemic, and by Aslan et al. (2020), which determined that coronavirus outbreak has enforced social isolation, which is strongly related to high stress levels. Previous investigation indicates that the high levels of perceived stress among university undergraduates during the first wave of coronavirus outbreak "were associated with greater concern about school-related problems, such as worry about insufficient computer skills, poor quality of online classes, passing classes and exams online, academic performance, professional career opportunities, and future studies" (Rogowska et al., 2021b: 12). A reduction of perceived stress during the second wave of pandemic "may be linked to a relaxation of the restrictive measures, for which previous studies have highlighted a significant psychological impact" (Gori, Topino, 2021: 10)).

Our results support Hypothesis 2, that the perceived and received social support levels after the second wave of COVID-19 would be significantly higher than after the first wave. We established that effect size for observed differences in perceived social support–total was week (Cohen's *d* = 0.26) as well as for differences in received social support–total (Cohen's *d* = 0.28).

This finding on perceived social support was similar to the findings of Xu et al. (2020) whose results showed that people's perceived social support increased from period during the first wave to the second peak COVID-19 stage (second wave), and effect size was small (Cohen's *d* = 0.36). The findings of our study are in agreement with a study by Turska and Stępień-Lampa (2021), which supports our findings that social support increased during the second wave of COVID-19 pandemic (a trend was found). However, our results are not consistent, for instance, with previous research (Laham et al., 2021), which identified no differences between waves in social support among university undergraduates (Cohen's *d* = 0.01).

The current study determined the significant differences between two waves in terms of all components of perceived social support: (effect size was week, and Cohen's *d* ranged from 0.23 to 0.27), however the significant differences were revealed between two waves only in terms of two components of received social support: undergraduates reported greater informational support

(effect size was week, Cohen's *d* = 0.19) and greater tangible support (effect size was also week, Cohen's *d* = 0.20).

In conclusion, our findings could be explained by the fact that the supportive environment could play an important role, and undergraduates „could strengthen their emotional connection with others through network-based ways, which might lower their COVID-19 stress" (Xu et al., 2020: 9), as well as „mental health organizations and practitioners should consider developing online social support programs to cater to the public's need for more social connections" (Xu et al., 2020: 9). The protective role of social support in the mental health (for instance, in terms of perceived stress) among undergraduates has been proved in many studies (for example, Li et al., 2020). The results in the present study also highlight the important role of social support in facilitating university undergraduates' positive adjustment to the COVID-19 pandemic.

The significance of research. This study makes a novel contribution to the literature, because the present longitudinal study has compared perceived academic stress and social support among university undergraduate students in a new context. i.e. during two waves COVID-19 pandemic. The current research assessed multiple dimensions of perceived academic stress (pressures to perform, perceptions of workload, self-perception, and time restrains), three types of perceived social support (family support, friend support, and significant other support) and four dimensions of received stress (emotional support, esteem support, informational support, and tangible support) in order to provide a comprehensive assessment of these phenomena.

Strengths, limitations and future prospects.

This study has several strengths, including its longitudinal design. We gathered data on two different waves of pandemics, which provides a good opportunity to understand changes of perceived academic stress and social support among university undergraduates. By the way, data were collected in real time, thus reducing recall bias.

Our results were limited to undergraduate students. This analysis did not cover master students of other age, and as a result, the conclusions cover only peculiarities of this particular age of group students. It would be appropriate to conduct similar study by examining undergraduate and graduate students. The web-based (online) setting of the study resulted in a reduced number of participants between the first and second waves of data collection. Furthermore, the data were collected in a self-report manner, what might generate information bias. Future research can cover replication with the same sample after the peak of COVID-19 pandemic.

5. Conclusion

Statistical analysis showed that perceived academic stress changed in the time between the first and second wave, and perceived academic stress levels among university undergraduates during the second wave of COVID-19 pandemic were significantly lower than during the first wave. The level of social support among university undergraduates improved significantly during the second wave of COVID-19 pandemic compared to the level during the first wave. It was found that all perceived social support indicators levels were higher during the second wave of pandemic than during the first wave. The study results also revealed significant differences between key received social support indicators among university undergraduates during the first and second wave of the pandemic. Specifically, university undergraduates reported greater informational support, tangible support, and received social support–total during the second wave of the pandemic than during the first wave.

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